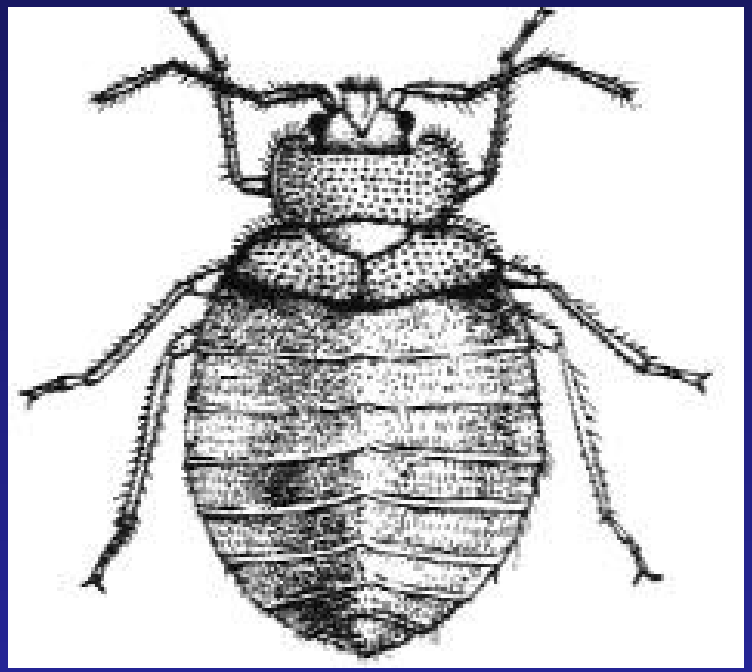
Miscellaneous Pests

- Bedbugs
- Lice
- Ticks
- Flies

Bed bugs



- Blood sucking insects which feed at night
- Occasional shipboard pests
- Not known to be vectors of any human diseases

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Bedbug Biology

- Oval shaped insects, 7 mm long
- Brownish, wingless
- Piercing, sucking mouthparts
- Hide in mattresses, box springs, cracks and crevices

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Bedbug Stylet

3 segmented Folds Underneath

Signs of Bedbugs

- Bite marks on skin
- Black fecal spots on mattress
- Blood spots on bedding
- Dead insects or cast skins

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Bedbugs feed by inserting proboscis under the skin

After feeding, bug becomes engorge and deposits feces on skin

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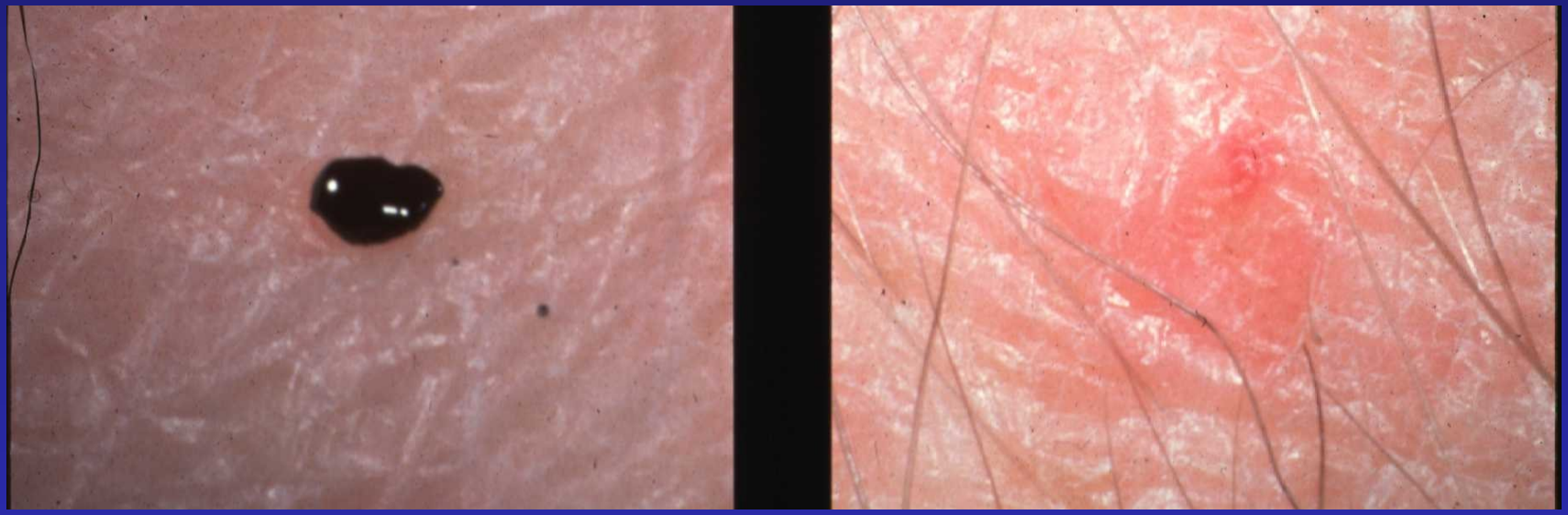
Bedbug bites



Feces deposited develops

Redness

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Bedbug Management

- Survey harborages: mattresses, bedding material, cracks and crevices, bulkheads
- Insecticide treatment of mattress sides, seams, and buttons and other harborages
- Allow material to dry thoroughly
- Steam cleaning and laundering will destroy bugs and eggs

Bedbug Frass in Mattress Se

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Lice

- **Body Lice** ***Pediculus humanus humanus***
- **Head Lice** ***Pediculus humanus capitus***
- **Pubic Lice** ***Pthirus pubis***

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Electron micrograph of l

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Body or Head Lice

-Look identical

-Head lice occur on th head; body lice on the body

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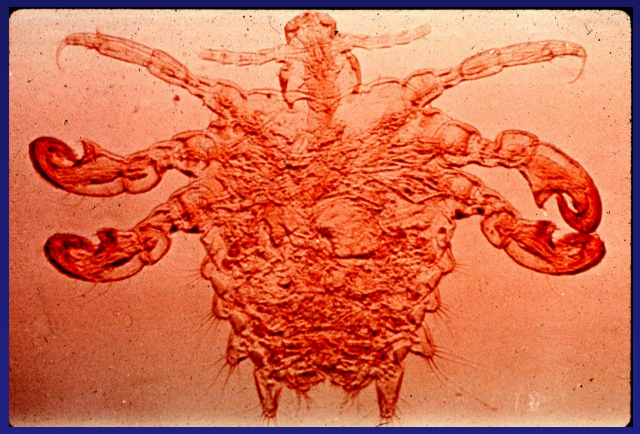
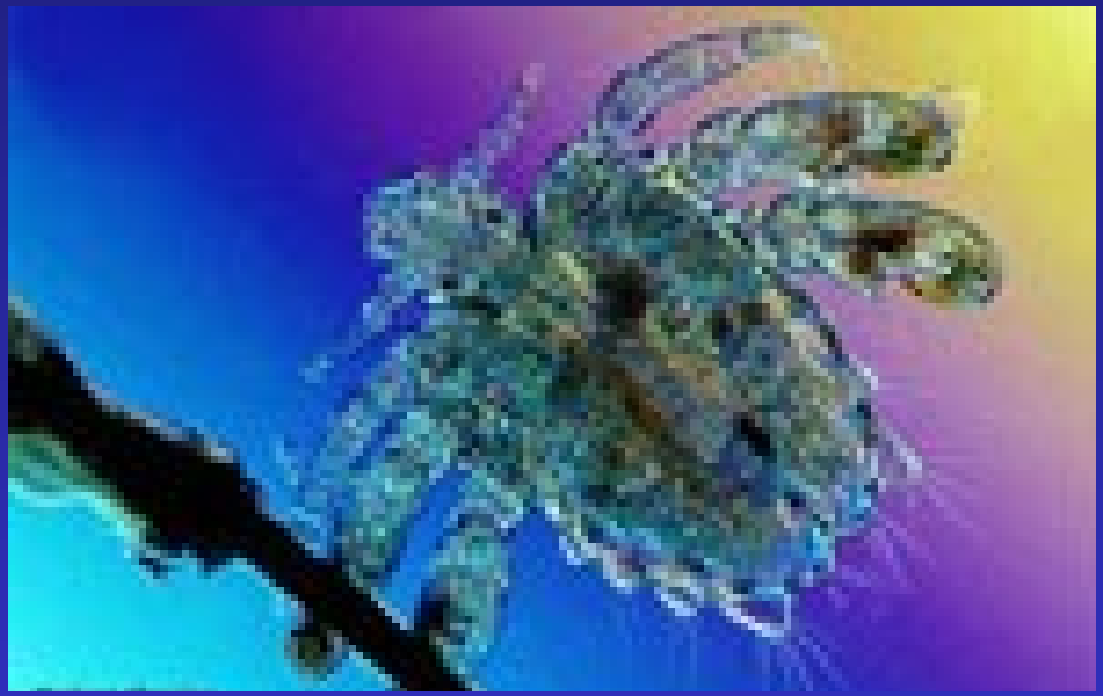


Pubic Lice



-Shorter body than other lice

-Common name comes from

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Disease transmission in lice

- Diseases transmitted by scratching louse body or feces into bite
- Diseases transmitted:
  - **Epidemic relapsing fever** (*Borrelia recurrentis*)
  - Epidemic typhus (*Rickettsia prowazekii*)
  - Trench fever (*Rickettsia quintana*)

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Where to find body lice

- Most common where clothing is in close contact with the skin underwear fork of trousers armpits waistline neck shoulders
- Eggs laid in seams of clothing

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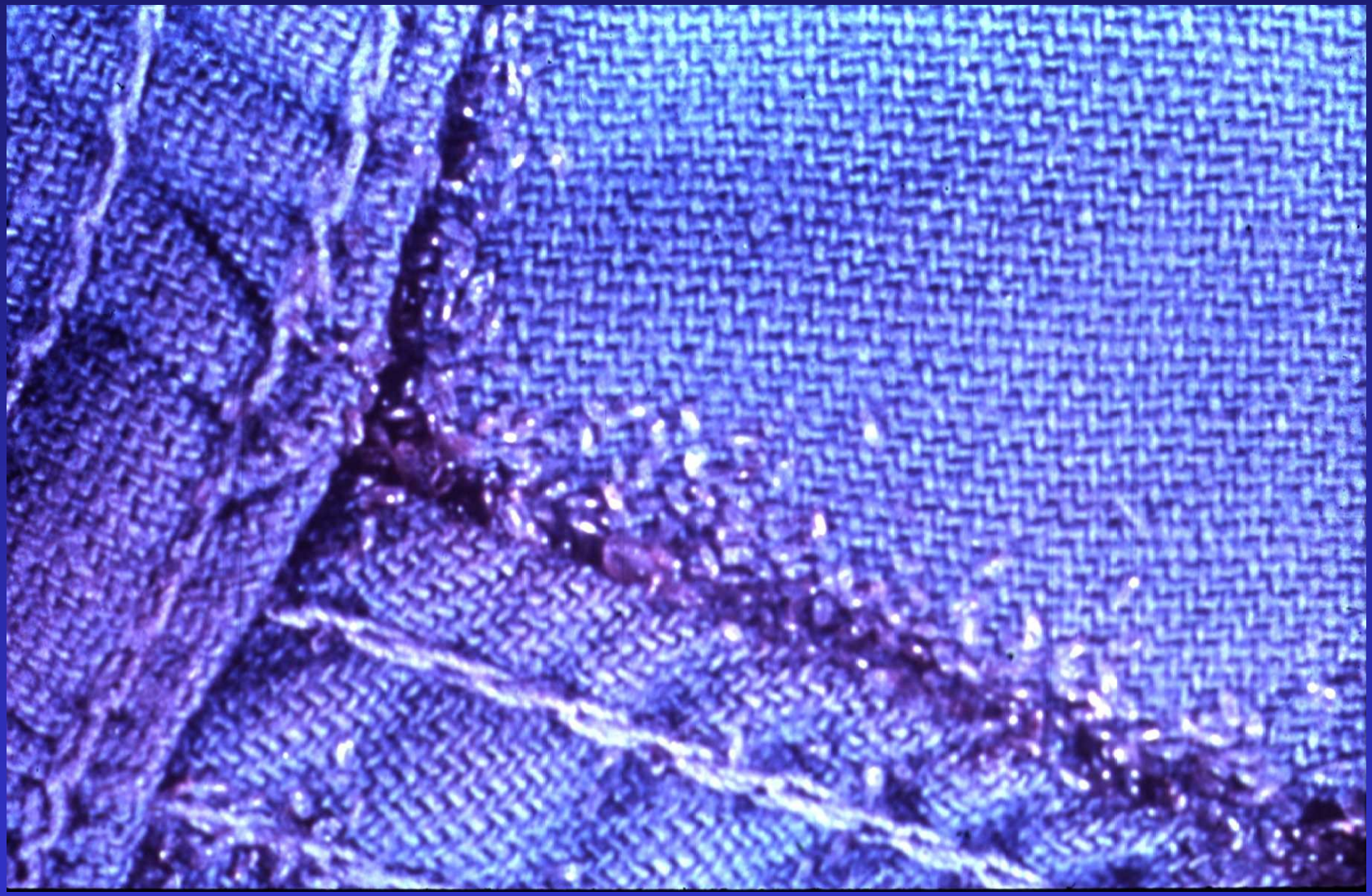
Body lice eggs in clothing



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Body Lice Reproduction

- Female lays about 5-8 eggs per day; about 100-150 eggs in her lifetime
- Eggs hatch in 17-21 days
- Nymphs mature in 28 days
- Adults live 30 days

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Body Lice Temperature Sensitivity

- Human body provides optimum temperature
- Lice leave body if hot with fever or cold after death and will die in 24-48 hours

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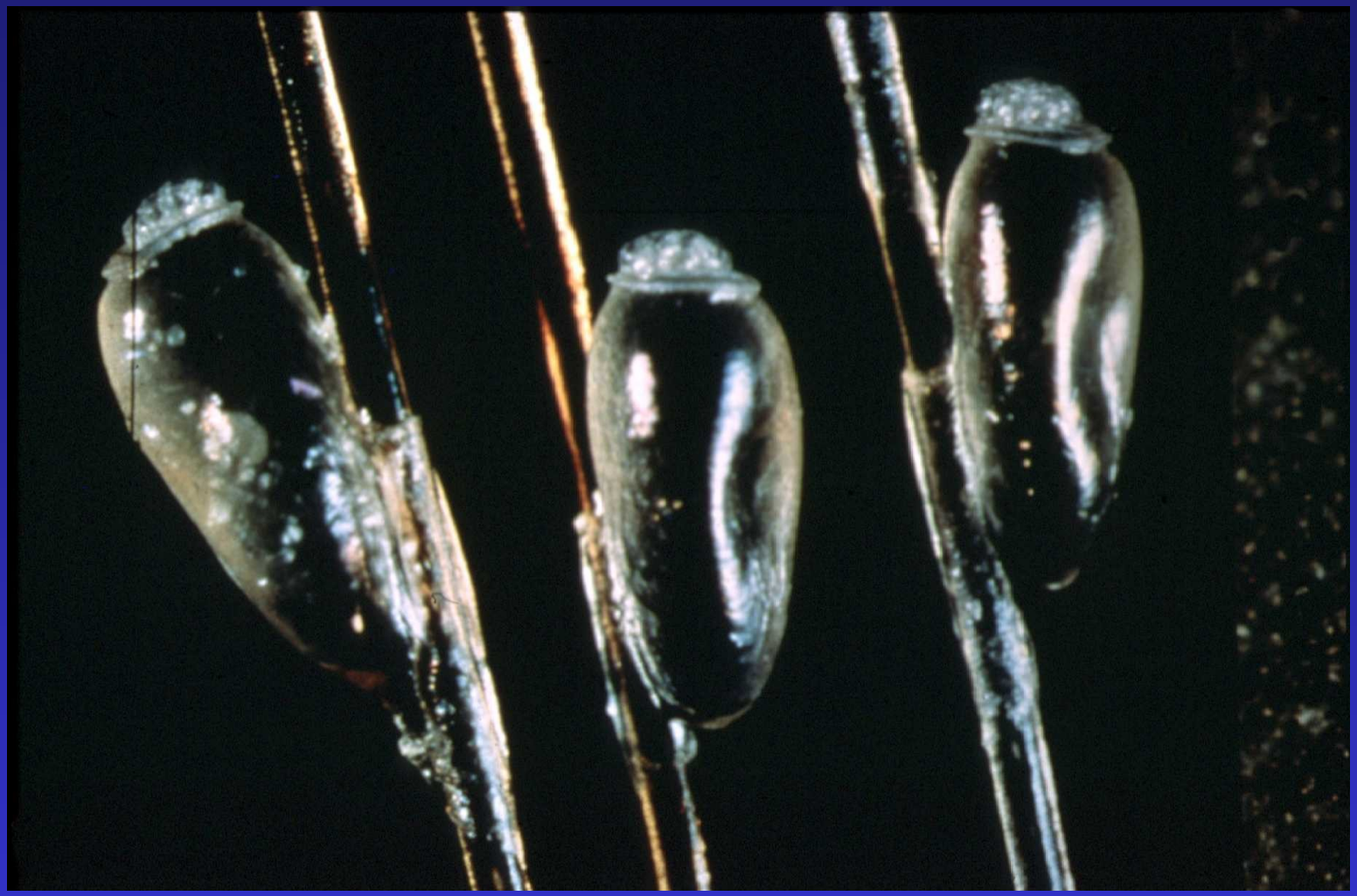
Head Lice Reproduction

- Nymphs mature in 7-10 days
- Adults live about 20 days
- Female lays 5-6 eggs per day
- 80 to 100 eggs per female
- Glued to hair

Lice eggs glued to h



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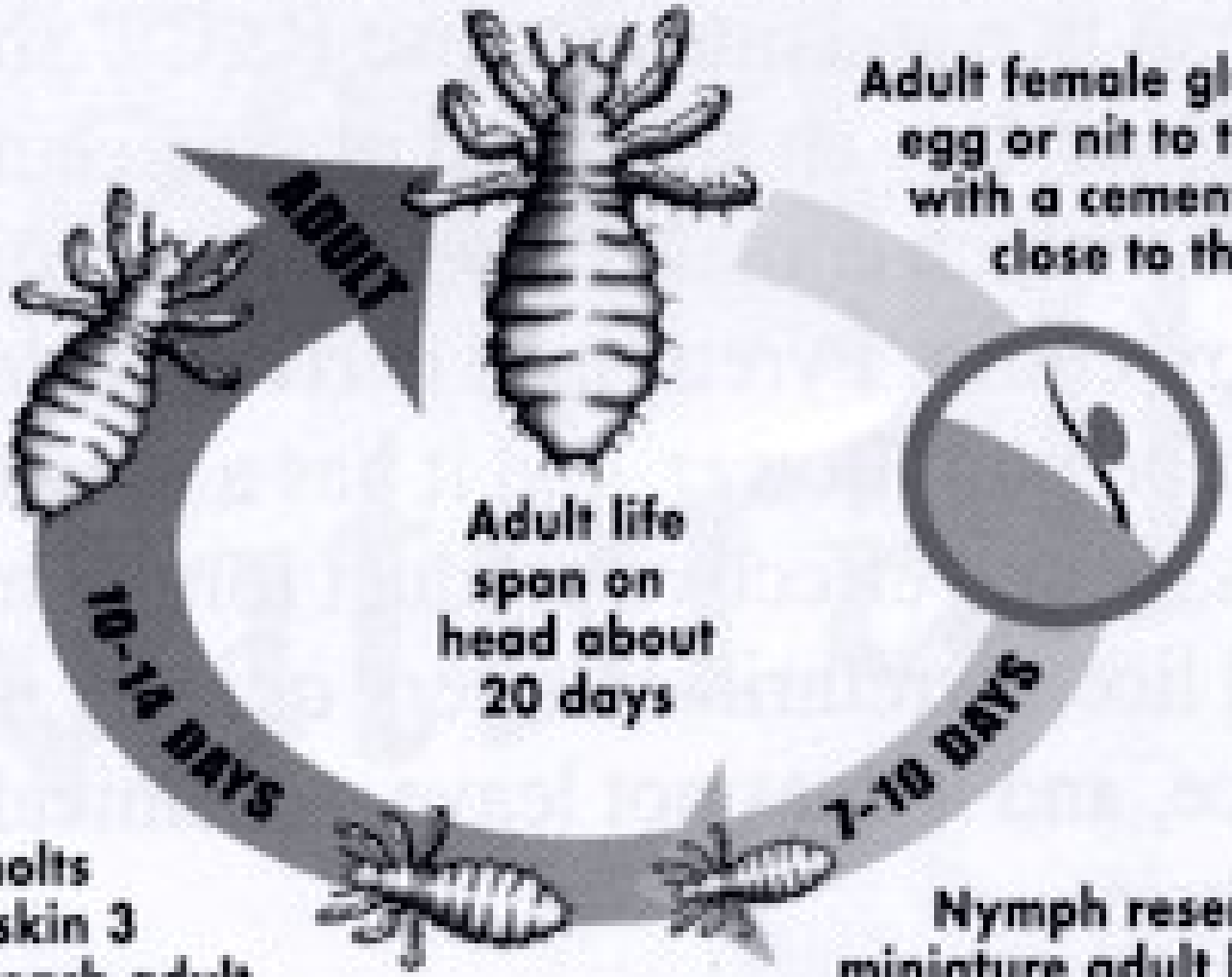
LIFE CYCLE OF THE HEAD LOUSE



Adult female glues the egg or nit to the hair with a cement bond, close to the scalp

Adult life span on head about 20 days

Nymph molts or sheds skin 3 times to reach adult stage in 10 to 14 days

Nymph resembling miniature adult hatches in 7 to 10 days

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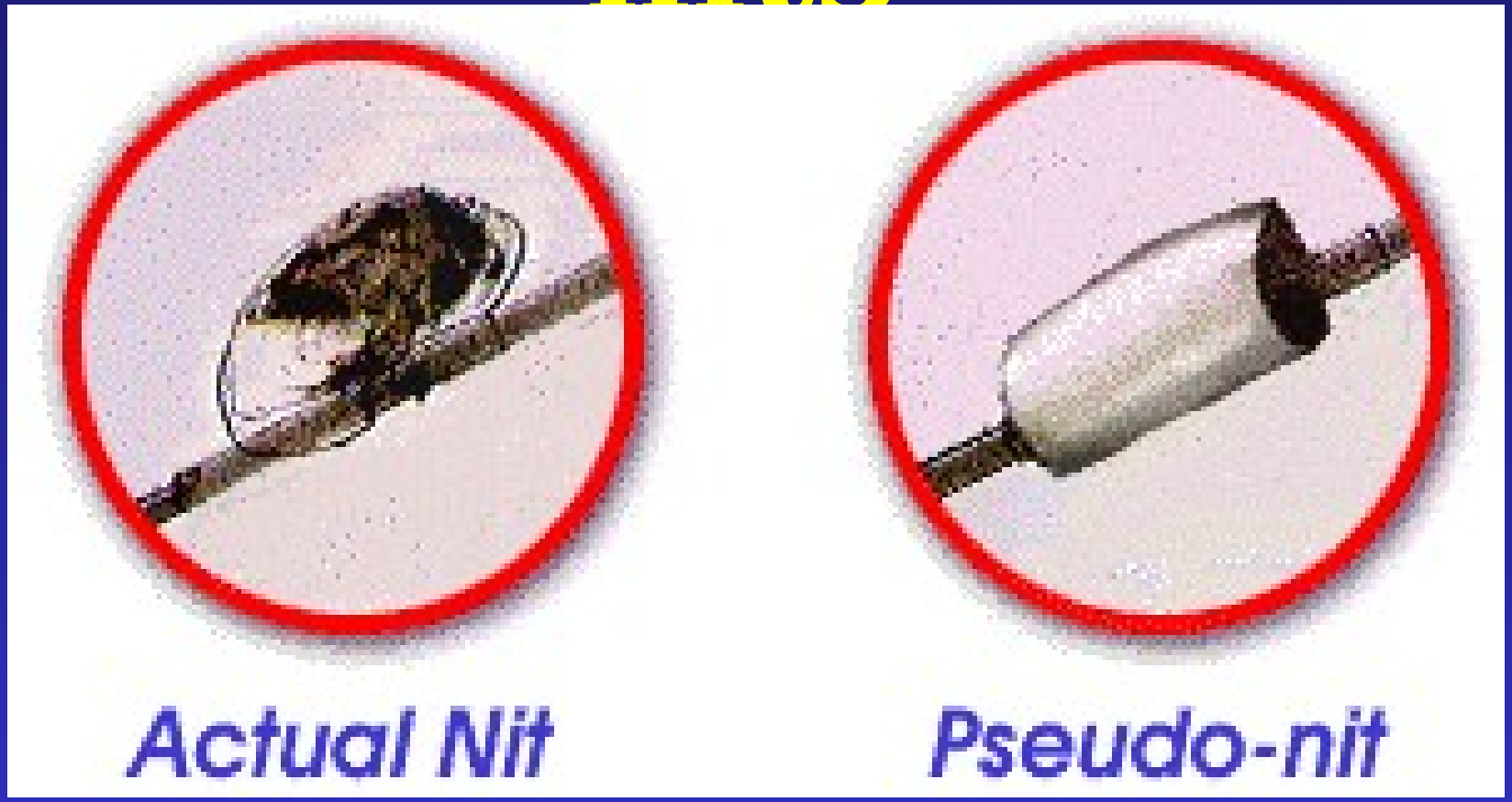
Nits and pseudo-nits



Pseudo-nits may be beads of hairspray or spli

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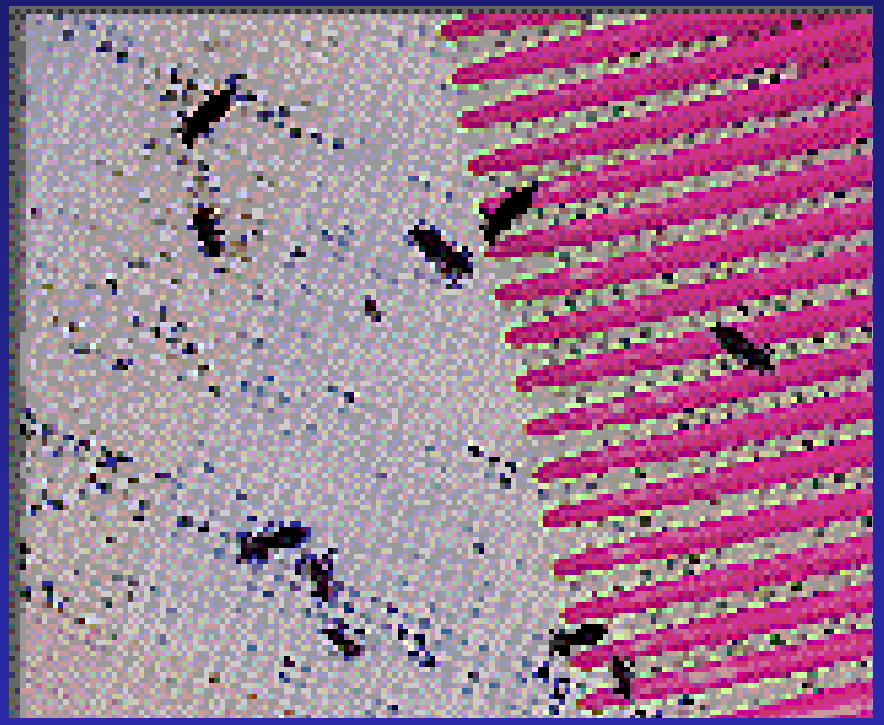

Head lice eggs glued to hair

Fine-toothed combs can b
used to remove adult lice

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Pubic Lice Infestations

- Small, grayish-white insects with grasping, crab-like legs
- Primarily infest pubic region
- Can infest chest and armpits
- Rarely infests beard, eyelashes, eyebrows

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Pubic Lice Reproduction

- Eggs laid on coarse body hairs
- Reproductive potential low, only 15-50 eggs per female
- Nymphs mature in 1 month
- Spread by close personal contact with infested people, toilet seats, bedding

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Lice Control

- Consult a physician for treatment of personnel
- Residual pesticides in bedding are ineffective
- Laundering bedding in hot water (100°C) will destroy all stages
- Hot drying for 20 min. or dry cleaning will kill lice

Ticks and Lyme Disease

- Bacterial infection caused by *Borrelia burgdorferi* spirochete
- Discovered in 1976 in Connecticut
- Spread by blacklegged ticks, *Ixodes* spp.
- Usually begins with a rash followed by flu- like symptoms
- Can lead to neurological and cardiac problems and chronic arthritis

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Borrelia burgdorferi bac

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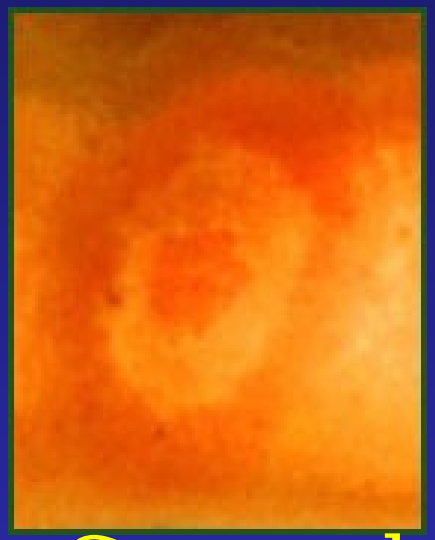
LD bullseye rashes

Rashes start with red spot



Center becomes white

Necrosis can occur

Progresses into erythema migrans rash

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Lyme disease can be confused with other bites/diseases

Spider Bite

Ringworm

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Treating Lyme disease

- Until recently, only antibiotics could be used for treatment
- Vaccine now available:
  - LYMErix by SmithKline Beecham
  - Only 76% effective
  - Neutralizes pathogen in tick's body
  - Must be given 3 shots: 0, 1 and 12 months

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Lyme Disease Prevention

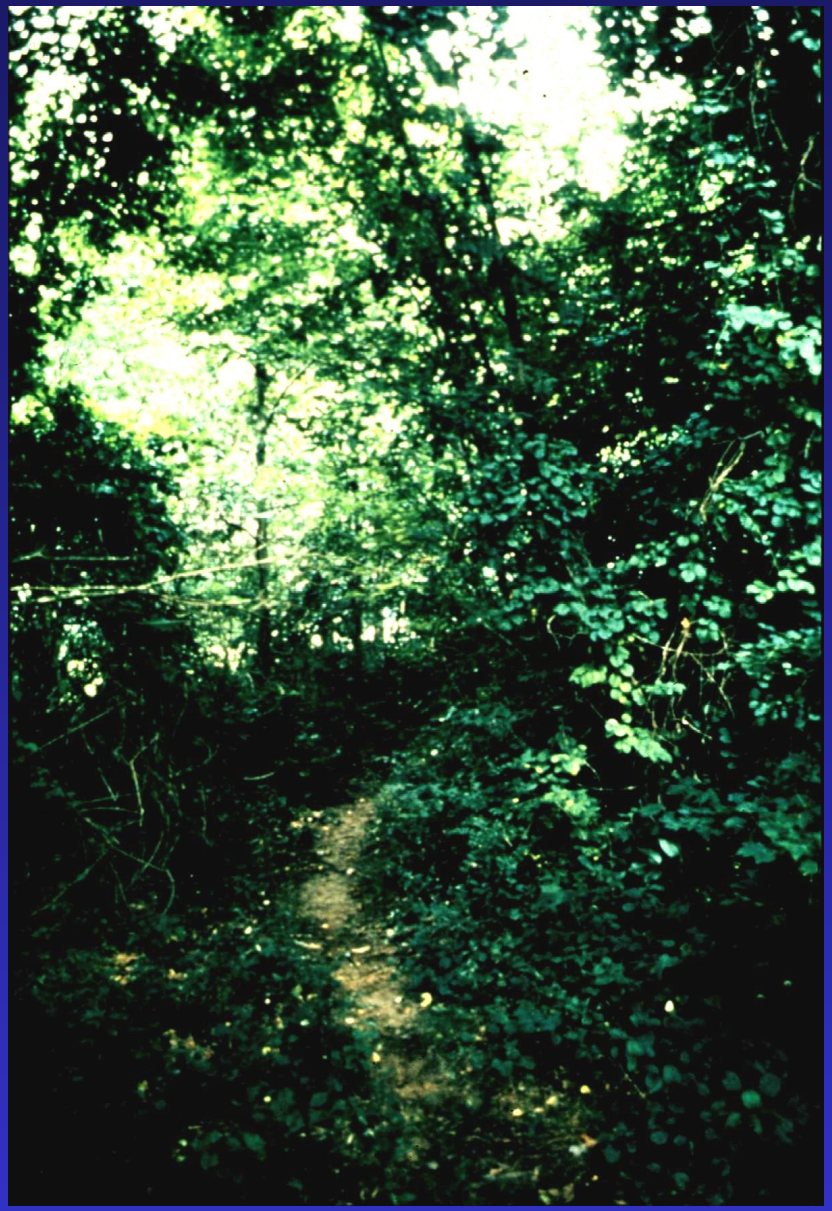
- Use repellents such as DEET for skin and Permanone for clothing
- Perform periodic tick searches and promptly remove feeding ticks
- Avoid high risk areas

Perform Periodic Tick Searches

Check collar,
waist line,
sleeves,
pants legs,
boots.

Avoid tick habitats

In these areas:
Wear DEET
Wear proper clothing



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Do not use flea collar

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Blacklegged Tick (Deer Tick)

Ixodes scapularis

- Confirmed vector of Lyme disease and ehrlichiosis

American Dog Tick

Dermacentor variabilis

- Confirmed vector of Rocky Mountain Spotted Fever and tick paralysis

Engorged Female T

- Abdomen expand
after feeding for a
prolonged period

- Not to be confus
with soft ticks

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Engorged tick attached to

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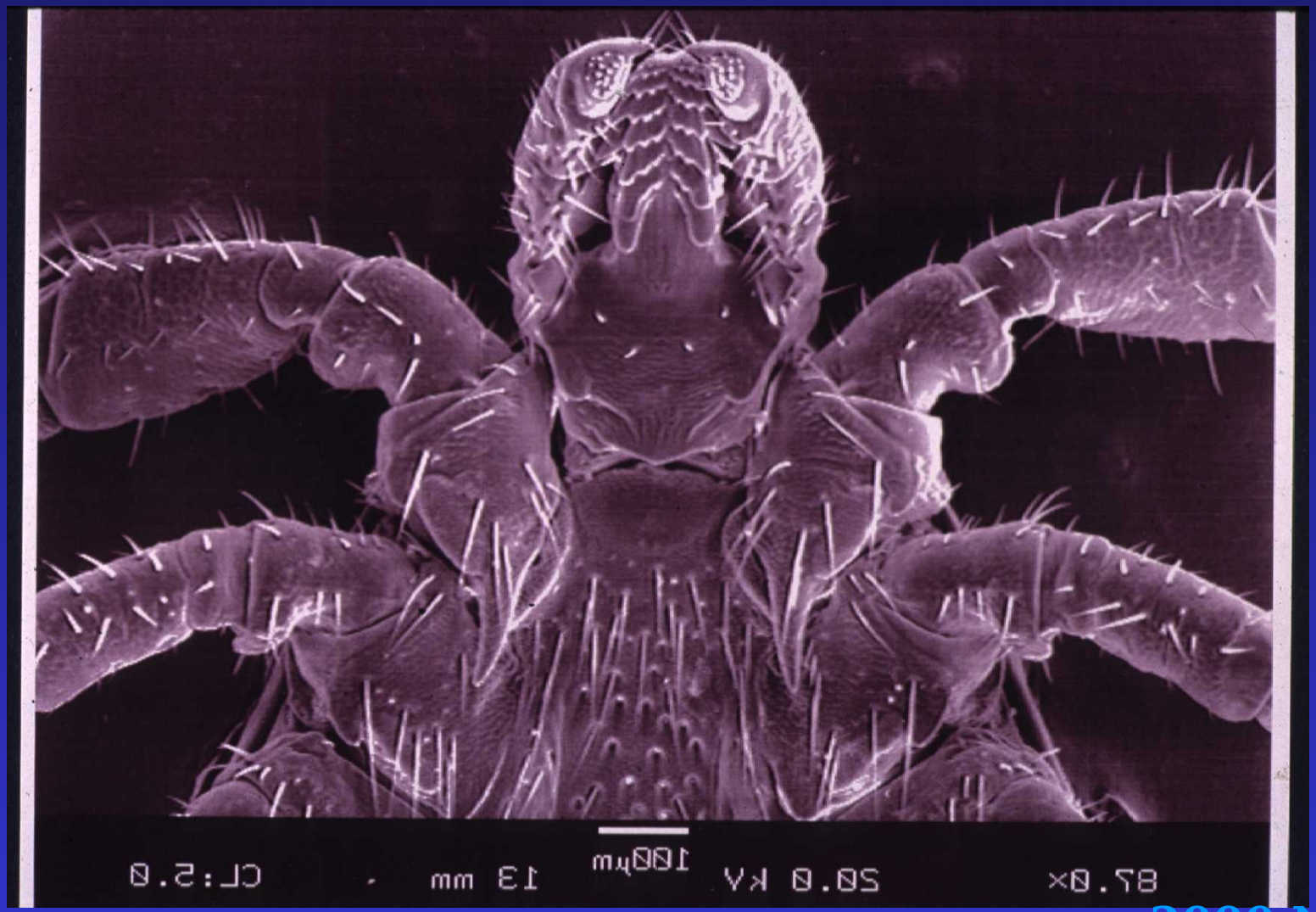
esting behavior of ticks enabl them to easily grab hosts

Ticks have barbed hypost



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How to remove ticks

- Do not rip them out of skin
- Do not burn them off with hot matches or use alcohol or vaseline
- Remove with fingernails or tweezers
- Grasp close to the skin and apply gentle pressure
- Cleanse the bite and save the tick for identification

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Scabies Mites
Sarcoptes scabiei

- Burrows benea
the outer layer o
skin

- Causes severe
itching

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Flies

- Filth flies and fruit flies are occasional shipboard pests
- They breed in garbage, fecal material, and carrion and can spread diseases
- They have high reproductive capacity and can disperse widely

Fly Control

- Locate and remove the source of infestation
- Clean cracks and crevices and seal with caulking
- Fruit flies can be controlled with space sprays of aerosol pyrethrins
  - secure ventilation and leave area closed while treating; ventilate before reentry